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I, JULIE BILLINGSLEY, TEAM LEADER EXAMINATION SUPPORT AND SALES hereby certify that annexed is a true copy of the Provisional specification in connection with Application No. 2002950568 for a patent by OWEN KEITH HUTCHISON as filed on 02 August 2002.

I further certify that the above application is now proceeding in the name of INNOVATIVE MOTORCYCLE TECHNOLOGY PTY. LTD pursuant to the provisions of Section 113 of the Patents Act 1990.

WITNESS my hand this
Eleventh day of August 2003

JULIE BILLINGSLEY
TEAM LEADER EXAMINATION
SUPPORT AND SALES



**Australia
Patents Act 1990**

**Provisional Specification
Provision Patent**

Combined Clutch Brake lever Actuator

The invention is described in the following statement:

Combined Clutch Brake lever Actuator

Description

This invention is intended to improve the controllability of motorised vehicles fitted with a hand operated clutch and a foot operated rear brake. It came about as a result of difficulties I had in operating the rear brake pedal of a motorcycle whilst negotiating difficult terrain. As your hands are always on the handlebars the underlying principle is that as many controls as possible should be hand operated.

The following invention is based on that principle by bringing rear brake controls that are normally foot operated into a hand control and combining it with the clutch control in a manner that improves the safety of the vehicle.

A single lever fitted to the left hand side of a handlebar on a motorised vehicle, finger operated, that actuates the clutch and rear brake, when pulled towards the handlebar or just the rear brake if the lever is pushed down.. Pushing down whilst pulling in the lever applies more force to the brakes and less to the clutch

To assist in the understanding of the invention reference will now be made to the accompanying drawings. Please note that figure (1) shows the invention in a partial cross section form viewing the vehicle from the front.

Figure 2 shows a partial cross section viewing from above from a position in front of the vehicle.

A single lever (1) can be pulled towards the handlebar (9) in direction (A). This action operates two hydraulic master cylinders (2) and (3) for the respective operation of the clutch and the rear brake of the vehicle. Each of these master cylinders features a finger-operated adjuster (note: the clutch adjuster is hidden from view in figure (1) but can be seen in figure (2) as no (8). These adjusters enable the engagement points of both the clutch and brake to be altered thus allowing an overlap of the respective functions. Tactile indication of the initiation of the brake function could also be provided in this system for example by using a spring loaded ball and detent. To operate the rear brake only the lever (1) is pushed in a downward direction shown as (B).

The movement of the lever downward, in direction (B), is permitted by use of three spherical bearings at points 6 and 4.

Item 5 is a thrust bearing designed to limit the vertical movement of the lever.

The drawing shows hydraulic connections to the brake, 10, and clutch, 11, and a fluid reservoir, 7.

It will be realised that the combined clutch and brake lever according to this invention is not restricted to the use of hydraulic cylinders as shown in the example, but may use other suitable forms of operating the clutch and brake. For example pneumatic,

electric or any other means by which the brake and clutch can be effectively activated. It will be further realised the leverage ratios and hydraulic cylinder sizes shown are for example only and an individual vehicle may require re-positioning of pivot points, changing of leverage ratios or cylinder sizes or the use of power assistance to increase efficiency.

I believe that this invention offers the following advantages over vehicles fitted with hand operated clutch and foot operated brakes.

1. Allows operator to utilise the rear brake whilst the operator's weight is placed at the extremes of it's mobility thus enhancing the controllability of the vehicle
2. Allows use of the vehicle by certain groups of disabled people
3. Simplifies the controls of the vehicle by virtue of the concept that a single lever is able to control the rotational speed of the rear wheel (within the constraints of gear selection and throttle setting)
4. Can be adjusted to help prevent stalling whilst using the rear brake of the vehicle.
5. Can be adjusted to help prevent rearward motion of the vehicle
6. Allows the operators foot that would normally activate the rear brake to perform other functions ie for dynamic or static stability, assistance for forward motion or for balance
7. Allows the rear brake of a vehicle to be used without weight being transferred to the side of the vehicle that the rear brake pedal was on. This reduces the side loading on the front tire whilst using the rear brake
8. Allows the redesign of the foot pegs to allow the rider to better shift his/her weight for and aft
9. By adjusting the overlap between the clutch and brake functions better control may be achieved over the retardation of the rotational speed of the rear wheel

Owen Hutchison

2nd August, 2002

Abstract

A single lever fitted to the left hand side of a handlebar on a motorised vehicle, finger operated, that actuates the clutch and rear brake, when pulled towards the handlebar or just the rear brake if the lever is pushed down.. Pushing down whilst pulling in the lever applies more force to the brakes and less to the clutch

